Description including Multiplex Structure, Rates and Formats.

4.4.1.2.4.5 ANSI T1.102-1993, American National Standard for Telecommunications - Digital Hierarchy - Electrical Interfaces.

4.4.1.2.4.6 ANSI T1.403-1989, American National Standard for Telecommunications - Carrier to Customer Installation, DS1 Metallic Interface Specification.

4.4.1.2.4.7 Bellcore GR-253-CORE, Synchronous Optical Network Systems (SONET), Common Generic Criteria..

4.4.1.2.4.8 Bellcore TR-TSY-000008, Digital Interface Between the SLC 96 Digital Loop Carrier System and a Local Digital Switch, Issue 2, August 1987.

4.4.1.2.4.9 Bellcore TR-NWT-000303, Integrated Digital Loop Carrier System Generic Requirements, Objectives and Interface, Issue 2, December 1992; Rev. 1, December 1993; Supplement 1, December 1993.

4.4.1.2.4.10 Bellcore TR-TSY-000673, Operations Systems Interface for an IDLC System, (LSSGR) FSD 20-02-2100, Issue 1, September 1989.

4.4.1.2.4.11 Bellcore Integrated Digital Loop Carrier System Generic Requirements, Objectives and Interface, GR-303-CORE, Issue 1, September 1995.

4.4.1.3 Requirements for an Intelligent Loop Concentrator/ Multiplexer

4.4.1.3.1 In addition to the basic functions described above for the Loop Concentrator/Multiplexer, the Intelligent Loop Concentrator/Multiplexer (IC/M) shall provide facility grooming, facility test functions, format conversion and signaling conversion as appropriate.

4.4.1.3.2 The underlying equipment that provides such IC/M function shall continuously monitor protected circuit packs and redundant common equipment.

4.4.1.3.3 The underlying equipment that provides such IC/M function shall automatically switch to a protection circuit pack on detection of a failure or degradation of normal operation.

4.4.1.3.4 The underlying equipment that provides such IC/M function shall be equipped with a redundant power supply or a battery back-up.

4.4.1.3.5 At MCIm's option, ILEC shall provide MCIm with real time performance monitoring and alarm data on IC/M elements that may affect MCIm's traffic. This includes IC/M hardware alarm data and facility alarm data on the underlying device that provides such IC/M function.

4.4.1.3.6 At MCIm's option, ILEC shall provide MCIm with real time ability to initiate tests on the underlying device that provides such IC/M function integrated test equipment as well as other integrated functionality for routine testing and fault isolation.

4.4.1.4 **Interface Requirements**

4.4.1.4.1 The Loop Concentrator/Multiplexer shall meet the following interface requirements, as appropriate for the configuration that MCIm designates:

4.4.1.4.2 The Loop Concentrator/Multiplexer shall provide an analog voice frequency copper twisted pair interface at the serving wire center, as described in the references in Section 4.4.1.2.4.

4.4.1.4.3 The Loop Concentrator/Multiplexer shall provide digital 4-wire electrical interfaces at the serving wire center, as described in the references in Section 4.4.1.2.4.

4.4.1.4.4 The Loop Concentrator/Multiplexer shall provide optical SONET interfaces at rates of OC-3, OC-12, OC-48, and OC-N, N as described in the references in Section 4.4.1.2.4.

4.4.1.4.5 The Loop Concentrator/Multiplexer shall provide the Bellcore TR-303 DS1 level interface at the serving wire center. Loop Concentrator/ Multiplexer shall provide Bellcore TR-08 modes 1&2 DS1 interfaces when designated by MCIm. Such interface requirements are specified in the references in Section 4.4.1.2.4.

4.4.1.5 The Intelligent Loop Concentrator/Multiplexer shall be provided to MCIm in accordance with the Technical References set forth in Sections 4.4.1.2.4.8 through 4.4.1.2.4.11 above.

4.4.2 Loop Feeder

4.4.2.1 **Definition:**

4.4.2.1.1 The Loop Feeder is the Network Element that provides connectivity between (1) a Feeder Distribution Interface (FDI) associated with Loop Distribution and a termination point appropriate for the media in a central office, or (2) a Loop Concentrator/Multiplexer provided in a remote terminal and a termination point appropriate for the media in a central office. ILEC shall provide MCIm physical access to the FDI, and the right to connect, the Loop Feeder to the FDI.

4.4.2.1.2 The physical medium of the Loop Feeder may be copper twisted pair, or single or multi-mode fiber or other technologies as designated by MCIm. In certain cases, MCIm will require a copper twisted pair loop even in instances where the medium of the Loop Feeder for services that ILEC offers is other than a copper facility.

4.4.2.2 **Requirements for Loop Feeder**

4.4.2.2.1 The Loop Feeder shall be capable of transmitting analog voice frequency, basic rate ISDN, digital data, or analog radio frequency signals as appropriate.

4.4.2.2.2 ILEC shall provide appropriate power for all active elements in the Loop Feeder. ILEC will provide appropriate power from a central office source, or from a commercial AC source with rectifiers for AC to DC conversion and 8-hour battery back-up when the equipment is located in an outside plant Remote Terminal (RT).

4.4.2.3 **Additional Requirements for Special Copper Loop Feeder Medium**

In addition to requirements set forth in Section 6.2 (above), MCIm may require ILEC to provide copper twisted pair Loop Feeder which is unfettered by any intervening equipment (e.g. filters, load coils, and range extenders), so that MCIm can use these Loop Feeders for a variety of services by attaching appropriate terminal equipment at the ends.

4.4.2.4 **Additional Technical Requirements for DS1 Conditioned Loop Feeder**

In addition to the requirements set forth in Section 4.4.2.2 above, MCIm may designate that the Loop Feeder be conditioned to transport a DS1 signal. The requirements for such transport are defined in the references below in Section 4.4.2.6.

4.4.2.5 **Additional Technical Requirements for Optical Loop Feeder**

In addition to the requirements set forth in Section 4.4.2.2 above, MCIm may designate that Loop Feeder will transport DS3 and OCn (where n is defined in the technical reference in Section 4.4.1.2.4.4. The requirements for such transport are defined in the references below in Section 4.4.2.6.

4.4.2.6 ILEC shall offer Loop Feeder in accordance with the requirements set forth in the following Technical References:

4.4.2.6.1 Bellcore Technical Requirement TR-NWT-000499, Issue 5, December 1993, section 7 for DS1 interfaces; and,

4.4.2.6.2 Bellcore TR-NWT-000057, Functional Criteria for Digital Loop Carrier Systems, Issue 2, January 1993.

4.4.2.6.2 Bellcore TR-NWT-000393, Generic Requirements for ISDN Basic Access Digital Subscriber Lines.

4.4.2.6.3 ANSI T1.106-1988, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (Single Mode).

4.4.2.6.4 ANSI T1.105-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Basic Description including Multiplex Structure, Rates and Formats.

4.4.2.6.5 ANSI T1.102-1993, American National Standard for Telecommunications - Digital Hierarchy - Electrical Interfaces.

4.4.2.6.6 ANSI T1.403-1989, American National Standard for Telecommunications - Carrier to Customer Installation, DS1 Metallic Interface Specification

4.4.2.6.7 Bellcore GR-253-CORE, Synchronous Optical Network Systems (SONET), Common Generic Criteria.

4.4.2.7 **Interface Requirements**

4.4.2.7.1 The Loop Feeder point of termination (POT) within a ILEC central office will be as follows:

4.4.2.7.1.1 Copper twisted pairs shall terminate on the MDF;

4.4.2.7.1.2 DS1 Loop Feeder shall terminate on a DSX1, DCS1/0 or DCS3/1; and

4.4.2.7.1.3 Fiber Optic cable shall terminate on a LGX.

4.4.2.7.2 Loop Feeder shall be equal to or better than each of the applicable interface requirements set forth in the following technical references:

4.4.2.7.2.1 Bellcore TR-TSY-000008, Digital Interface Between the SLC 96 Digital Loop Carrier System and a Local Digital Switch, Issue 2. August 1987.

4.4.2.7.2.2 Bellcore TR-NWT-000303, Integrated Digital Loop Carrier System Generic Requirements, Objectives and Interface, Issue 2, December 19921- Rev. 1, December 1993-1 Supplement 1, December 1993.

4.4.2.7.2.3 Bellcore Integrated Digital Loop Carrier System Generic Requirements, Objectives and Interface, GR-303-CORE, Issue 1, September 1995.

Section 5. Network Interface Device

5.1 **Definition**:

5.1.1 The Network Interface Device (NID) is a single-line termination device or that portion of a multiple-line termination device required to terminate a single line or circuit. The function of the NID is to establish the network demarcation point between a carrier and its subscriber. The NID features two independent chambers or divisions which separate the service provider's network from the customer's inside wiring. Each chamber or division contains the appropriate connection points or posts to which the service provider, and the subscriber each make their connections. The NID provides a protective ground connection, provides protection against lightning and other high voltage surges and is capable of terminating cables such as twisted pair cable.

5.1.2 With respect to multiple-line termination devices, MCIm shall specify the quantity of NIDs it requires within such device.

5.1.3 Figure 1 shows a schematic of a NID.

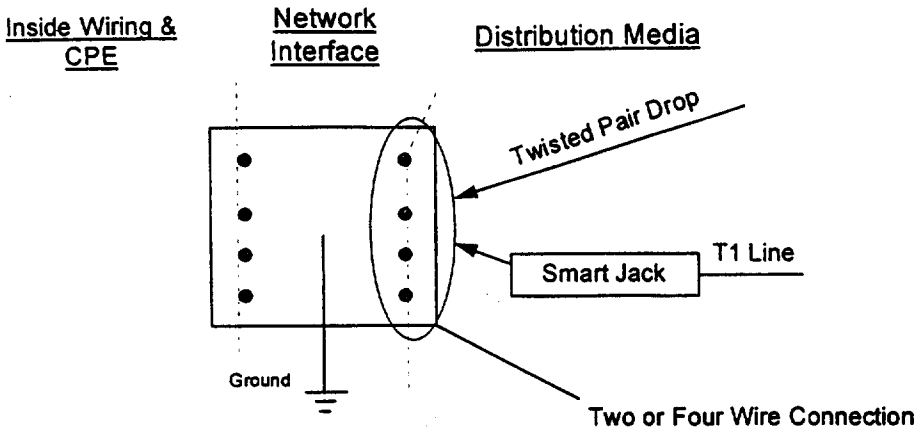

Figure 1 - Network Interface Device

5.2 Technical Requirements

5.2.1 The Network Interface Device shall provide a clean, accessible point of connection for the inside wiring and for the Distribution Media and/or cross connect to MCIm's NID and shall maintain a connection to ground that meets the requirements set forth below.

5.2.2 The NID shall be capable of transferring electrical analog or digital signals between the customer's inside wiring and the Distribution Media and/or cross connect to MCIm's NID.

5.2.3 All NID posts or connecting points shall be in place, secure, usable and free of any rust or corrosion. The protective ground connection shall exist and be properly installed. The ground wire shall be free of rust or corrosion and have continuity relative to ground.

5.2.4 The NID shall be capable of withstanding all normal local environmental variations.

5.2.5 Where the NID is not located in a larger, secure cabinet or closet, the NID shall be protected from physical vandalism. The NID shall be physically accessible to MCIm designated personnel. In cases where entrance to the customer premises is required to

give access to the NID, MCIm shall obtain entrance permission directly from the customer.

5.2.6 ILEC shall offer the NID together with, and separately from the Distribution Media component of Loop Distribution.

5.3 **Interface Requirements**

5.3.1 The NID shall be the interface to customers' premises wiring for all loop technologies.

5.3.2 The NID shall be equal to or better than all of the industry standards for NIDs set forth in the following technical references:

5.3.2.1 Bellcore Technical Advisory TA-TSY-000120 "Customer Premises or Network Ground Wire";

5.3.2.2 Bellcore Generic Requirement GR-49-CORE "Generic Requirements for Outdoor Telephone Network Interface Devices";

5.3.2.3 Bellcore Technical Requirement TR-NWT-00239 "Indoor Telephone Network Interfaces";

5.3.2.4 Bellcore Technical Requirement TR-NWT-000937 "Generic Requirements for Outdoor and Indoor Building Entrance"; and,

5.3.2.5 Bellcore Technical Requirement TR-NWT-0001 33 "Generic Requirements for Network Inside Wiring."

Section 6. Distribution

6.1 **Definition**:

6.1.1 Distribution provides connectivity between the NID component of Loop Distribution and the terminal block on the customer-side of a Feeder Distribution Interface (FDI). The FDI is a device that terminates the Distribution Media and the Loop Feeder, and cross-connects them in order to provide a continuous transmission path between the NID and a telephone company central office. There are three basic types of feeder-distribution connection: I) multiple (splicing of multiple distribution pairs onto one feeder pair); II) dedicated ("home run"); and iii) interfaced ("cross-connected"). While older plant uses multiple and dedicated

approaches, newer plant and all plant that uses DLC or other pair-gain technology necessarily uses the interfaced approach. The feeder-distribution interface (FDI) in the interfaced design makes use of a manual cross-connection, typically housed inside an outside plant device ("green box") or in a vault or manhole.

6.1.2 The Distribution may be copper twisted pair, coax cable, single or multi-mode fiber optic cable or other technologies. A combination that includes two or more of these media is also possible. In certain cases, MCIm shall require a copper twisted pair Distribution even in instances where the Distribution for services that ILEC offers is other than a copper facility.

6.2 Requirements for All Distribution

6.2.1 Distribution shall be capable of transmitting signals for the following services (as requested by MCIm):

6.2.1.1 Two-wire & four-wire analog voice grade loops;

6.2.1.2 Two-wire & four-wire loops that are conditioned to transmit the digital signals needed to provide services such as ISDN, ADSL, HDSL, and DS1-level signals.

6.2.2 Distribution shall transmit all signaling messages or tones. Where the Distribution includes any active elements that terminate any of the signaling messages or tones, these messages or tones shall be reproduced by the Distribution at the interfaces to an adjacent Network Element in a format that maintains the integrity of the signaling messages or tones.

6.2.3 Distribution shall support functions associated with provisioning, maintenance and testing of the Distribution itself, as well as provide necessary access to provisioning, maintenance and testing functions for Network Elements to which it is associated.

6.2.4 Where possible, Distribution shall provide performance monitoring of the Distribution itself, as well as provide necessary access for performance monitoring for Network Elements to which it is associated.

6.2.5 Distribution shall be equal to or better than all of the applicable requirements set forth in the following technical references:

6.2.5.1 Bellcore TR-TSY-000057, "Functional Criteria for Digital Loop Carrier Systems", and,

6.2.5.2 Bellcore TR-NWT-000393, "Generic Requirements for ISDN Basic Access Digital Subscriber Lines."

6.2.6 ILEC shall provide MCIm with physical access to, and the right to connect to, the FDI.

6.2.7 ILEC shall offer Distribution together with, and separately from the NID component of Loop Distribution.

6.3 Additional Requirements for Special Copper Distribution

In addition to Distribution that supports the requirements in Section 6.2. (above), MCIm may designate Distribution to be copper twisted pair which are unfettered by any intervening equipment (e.g., filters, load coils, range extenders) so that MCIm can use these loops for a variety of services by attaching appropriate terminal equipment at the ends.

6.4 Additional Requirements for Fiber Distribution

Fiber optic cable Distribution shall be capable of transmitting signals for the following services in addition to the ones under Section 6.2.1 above:

6.4.1 DS3 rate private line service;

6.4.2 Optical SONET OCn rate private lines (where n is defined in the technical reference in Section 4.4.1.2.4.4; and

6.4.3 Analog Radio Frequency based services (e.g., Cable Television (CATV)).

6.5 Additional Requirements for Coaxial Cable Distribution

Coaxial cable (coax) Distribution shall be capable of transmitting signals for the following services in addition to the ones under Section 6.2.1 above:

6.5.1 Broadband data, either one way or bi-directional, symmetric or asymmetric, at rates between 1.5 Mb/s and 45 Mb/s; and

6.5.2 Analog Radio Frequency based services (e.g., CATV).

6.6 **Interface Requirements**

6.6.1 Signal transfers between the Distribution and the NID and an adjacent Network Element shall have levels of degradation that are within the performance requirements set forth in Section 15.2 of this Attachment III.

6.6.2 Distribution shall be equal to or better than each of the applicable interface requirements set forth in the following technical references:

6.6.2.1 Bellcore TR-NWT-000049, "Generic Requirements for Outdoor Telephone Network Interface Devices," Issued December 1,1994;

6.6.2.2 Bellcore TR-NWT-000057, "Functional Criteria for Digital Loop Carrier Systems," Issued January 2, 1993;

6.6.2.3 Bellcore TR-NWT-000393, "Generic Requirements for ISDN Basic Access Digital Subscriber Lines";

6.6.2.4 Bellcore TR-NWT-000253, SONET Transport Systems: Common Criteria (A module of TSGR, FR-NWT-000440), Issue 2, December 1991;

Section 7. Local Switching

7.1 **Definition**:

7.1.1 Local Switching is the Network Element that provides the functionality required to connect the appropriate lines or trunks wired to the Main Distributing Frame (MDF) or Digital Cross Connect (DSX) panel to a desired line or trunk. The desired connection path for each call type will vary by customer and will be specified by MCIm as a routing scenario that will be implemented in advance as part of or after the purchases of the unbundled local switching. Such functionality shall include all of the features, functions, and capabilities that the underlying ILEC switch that is providing such Local Switching function is capable of providing, including but not limited to: line signaling and signaling software, digit reception, dialed number translations, call screening, routing, recording, call supervision, dial tone, switching, telephone number provisioning, announcements, calling features and capabilities (including call processing), Centrex, or Centrex like services,

Automatic Call Distributor (ACD), Carrier pre-subscription (e.g., long distance carrier, intraLATA toll), Carrier Identification Code (CIC) portability capabilities, testing and other operational features inherent to the switch and switch software. It also provides access to transport, signaling (ISDN User Part (ISUP) and Transaction Capabilities Application Part (TCAP), and platforms such as adjuncts, Public Safety Systems (911), operator services, directory services and Advanced Intelligent Network (AIN). Remote Switching Module functionality is included in the Local Switching function. Local Switching shall also be capable of routing local, intraLATA, interLATA, calls to international customer's preferred carrier, call features (e.g., call forwarding) and Centrex capabilities.

Local Switching, including the ability to route to MCIm's transport facilities, dedicated facilities and systems, shall be unbundled from all other unbundled Network Elements, i.e., Operator Systems, Common Transport, and Dedicated Transport.

7.2. Technical Requirements

7.2.1 Local Switching shall be equal to or better than the requirements for Local Switching set forth in Bellcore's Local Switching Systems General Requirements (FR-NWT-000064).

7.2.1.1 ILEC shall route calls to the appropriate trunk or lines for call origination or termination.

7.2.1.2 ILEC shall route calls on a per line or per screening class basis to (1) ILEC platforms providing Network Elements or additional requirements, (2) MCIm designated platforms, or (3) third-party platforms.

7.2.1.3 ILEC shall provide recorded announcements as designated by MCIm and call progress tones to alert callers of call progress and disposition.

7.2.1.4 ILEC shall change a customer from ILEC's services to MCIm's services without loss of feature functionality.

7.2.1.5 ILEC shall perform routine testing (e.g., Mechanized Loop Tests (MLT) and test calls such as 105, 107 and 108 type calls) and fault isolation on a schedule designated by MCIm.

7.2.1.6 ILEC shall repair and restore any equipment or any other maintainable component that may adversely impact MCIm's use of unbundled Local Switching.

7.2.1.7 ILEC shall control congestion points such as mass calling events, and network routing abnormalities, using capabilities such as Automatic Call Gapping, Automatic Congestion Control, and Network Routing Overflow. Application of such control shall be competitively neutral and not favor any user of unbundled switching or the ILEC.

7.2.1.8 ILEC shall perform manual call trace as designated by MCIm and permit customer originated call trace.

7.2.1.9 ILEC shall record all billable events and send the appropriate billing data to MCIm as outlined in Attachment 8.

7.2.1.10 For Local Switching used as 911 Tandems, ILEC shall allow interconnection from MCIm local switching elements and ILEC shall route the calls to the appropriate Public Safety Access Point (PSAP).

7.2.1.11 Where ILEC provides the following special services, it shall provide to MCIm:

7.2.1.11.1 Essential Service Lines;

7.2.1.11.2 Telephone Service Prioritization;

7.2.1.11.3 Related services for handicapped;

7.2.1.11.4 Soft dial tone where required by law; and

7.2.1.11.5 Any other service required by law or regulation.

7.2.1.12 ILEC shall provide Switching Service Point (SSP) capabilities and signaling software to interconnect the signaling links destined to the Signaling Transfer Point Switch (STPs). In the event that Local Switching is provided out of a switch without SS7 capability, the Tandem shall provide this capability as discussed in the section on

Tandem Switching. These capabilities shall adhere to Bellcore specifications TCAP (GR-1432-CORE), ISUP (GR-905-CORE), Call Management (GR-1429-CORE), Switched Fractional DS1 (GR-1357-CORE), Toll Free Service (GR-1428-CORE), Calling Name (GR-1597-CORE), Line Information Database (GR-954-CORE), and Advanced Intelligent Network (GR-2863-CORE).

7.2.1.13 ILEC shall provide interfaces to adjuncts through industry standard and Bellcore interfaces. These adjuncts can include, but are not limited to, Service Node, Service Circuit Node, Voice Mail and Automatic Call Distributors. Examples of existing interfaces are ANSI ISDN standards Q.931 and Q.932.

7.2.1.14 ILEC shall provide performance data regarding a customer line, traffic characteristics or other measurable elements to MCIm, upon MCIm's request.

7.2.1.15 ILEC shall offer all Local Switching features that are technically feasible and provide feature offerings at parity to those provided by ILEC to itself or any other party. Such feature offerings shall include but are not limited to:

7.2.1.15.1 Basic and primary rate ISDN;

7.2.1.15.2 Residential features;

7.2.1.15.3 Custom Local Area Signaling Services (CLASS/LASS);

7.2.1.15.4 Custom Calling Features

7.2.1.15.5 Centrex (including equivalent administrative capabilities, such as customer accessible reconfiguration and detailed message recording); and

7.2.1.15.6 Advanced intelligent network triggers supporting MCIm features. ILEC shall offer to MCIm all AIN triggers currently available to ILEC for offering AIN-based services in accordance with applicable technical references:

7.2.1.15.6.1 Off-Hook Immediate;

7.2.1.15.6.2 Off-Hook Delay;

7.2.1.15.6.3 Private EAMF Trunk;

7.2.1.15.6.4 Shared Interoffice Trunk (EAMF, SS7);

7.2.1.15.6.5 Termination Attempt;

7.2.1.15.6.6 3/6/10;

7.2.1.15.6.7 N11;

7.2.1.15.6.8 Feature Code Dialing;

7.2.1.15.6.9 Custom Dialing Plan(s) including 555 services; and

7.2.1.15.6.10 Automatic Route Selection.

7.2.1.16 ILEC shall assign each MCIm customer line the class of service designated by MCIm (e.g., using line class codes or other switch specific provisioning methods), and shall route directory assistance calls from MCIm customers as directed by MCIm at MCIm's option. This includes each of the following call types:

7.2.1.16.1 O+/O- calls

7.2.1.16.2 911 calls

7.2.1.16.3 411/DA calls

7.2.1.16.4 InterLATA calls specific to PIC or regardless of PIC

7.2.1.16.5 IntraLATA calls specific to PIC or regardless of PIC

7.2.1.16.6 800/888 calls, prior to database query

7.1.2.16.7 Call forwarding of any type supported on the switch, to a line or a trunk

7.1.2.16.8 Any other customized routing that may be supported by the ILEC switch

7.2.1.17 ILEC shall assign each MCIm customer line the class of services designated by MCIm (e.g., using line class codes or other switch specific provisioning methods) and shall route operator calls from MCIm customers as directed by MCIm at MCIm's option. For example, ILEC may translate 0- and 0+ intraLATA traffic, and route the call through appropriate trunks to an MCIm Operator Services Position System (OSPS). Calls from Local Switching must pass the ANI-II digits unchanged.

7.2.1.18 If an MCIm customer subscribes to MCIm provided voice mail and messaging services, ILEC shall redirect incoming calls to the MCIm system based upon presubscribed service arrangements (e.g., busy, don't answer, number of rings). In addition, ILEC shall provide a Standard Message Desk Interface-Enhanced (SMDI-E) interface to the MCIm system. ILEC shall support the Inter-switch Voice Messaging Service (IVMS) capability.

7.2.1.19 Local Switching shall be offered in accordance with the requirements of the following technical references and their future releases:

7.2.1.19.1 GR-1298-CORE, AIN Switching System Generic Requirements;

7.2.1.19.2 GR-1299-CORE, AIN Switch-Service Control Point (SCP)/Adjunct Interface Generic Requirements;

7.2.1.19.3 TR-NWT-001284, AIN 0.1 Switching System Generic Requirements;

7.2.1.19.4 SR-NWT-002247, AIN Release 1 Update.

7.2.2 **Interface Requirements**:

7.2.2.1 ILEC shall provide the following interfaces to loops:

7.2.2.1.1 Standard Tip/Ring interface including loopstart or groundstart, on-hook signaling (e.g., for

calling number, calling name and message waiting lamp);

7.2.2.1.2 Coin phone signaling;

7.2.2.1.3 Basic Rate Interface ISDN adhering to ANSI standards Q.931, Q.932 and appropriate Bellcore Technical Requirements;

7.2.2.1.4 Two-wire analog interface to PBX to include reverse battery, E&M, wink start and DID;

7.2.2.1.5 Four-wire analog interface to PBX to include reverse battery, E&M, wink start and DID;

7.2.2.1.6 Four-wire DS1 interface to PBX or customer provided equipment (e.g., computers and voice response systems);

7.2.2.1.7 Primary Rate ISDN to PBX adhering to ANSI standards Q.931, Q.932 and appropriate Bellcore Technical Requirements;

7.2.2.1.8 Switched Fractional DS1 with capabilities to configure Nx64 channels (where N = 1 to 24); and

7.2.2.1.9 Loops adhering to Bellcore TR-NWT-08 and TR-NWT-303 specifications to interconnect Digital Loop Carriers.

7.2.2.2 ILEC shall provide access to the following but not limited to:

7.2.2.2.1 SS7 Signaling Network or Multi-Frequency trunking if requested by MCIm;

7.2.2.2.2 Interface to MCIm operator services systems or Operator Services through appropriate trunk interconnections for the system; and

7.2.2.2.3 Interface to MCIm directory assistance services through the MCIm switched network or to Directory Services through the appropriate trunk interconnections for the system; and 950 access or

other MCIm required access to interexchange carriers as requested through appropriate trunk interfaces.

7.3 Integrated Services Digital Network (ISDN)

7.3.1 Integrated Services Digital Network (ISDN) is defined in two variations. The first variation is Basic Rate ISDN (BRI). BRI consists of 2 Bearer (B) Channels and one Data (D) Channel. The second variation is Primary Rate ISDN (PRI). PRI consists of 23 B Channels and one D Channel. Both BRI and PRI B Channels may be used for voice, Circuit Switched Data (CSD) or Packet Switched Data (PSD). The BRI D Channel may be used for call related signaling, non-call related signaling or packet switched data. The PRI D Channel may be used for call related signaling.

7.3.2 Technical Requirements — ISDN

7.3.2.1 ILEC shall offer Data Switching providing ISDN that, at a minimum:

7.3.2.2 Provides integrated Packet handling capabilities;

7.3.2.3 Allows for full 2B+D Channel functionality for BRI; and

7.3.2.4 Allows for full 23B+D Channel functionality for PRI.

7.3.2.5 Each B Channel shall allow for voice, 64 Kbps CSD, and PSD of 128 logical channels at minimum speeds of 19 Kbps throughput of each logical channel up to the total capacity of the B Channel.

7.3.2.6 Each B Channel shall provide capabilities for alternate voice and data on a per call basis.

7.3.2.7 The BRI D Channel shall allow for call associated signaling, non-call associated signaling and PSD of 16 logical channels at minimum speeds of 9.6 Kbps throughput of each logical channel up to the total capacity of the D channel.

7.3.2.8 The PRI D Channel shall allow for call associated signaling.

7.3.3 Interface Requirements — ISDN

7.3.3.1 ILEC shall provide the BRI U interface using 2-wire copper loops in accordance with TR-NWT-000393, January 1991, *Generic Requirements for ISDN Basic Access Digital Subscriber Lines.*

7.3.3.2 ILEC shall provide the BRI interface using Digital Subscriber Loops adhering to Bellcore TR-NWT-303 specifications to interconnect Digital Loop Carriers.

7.3.3.3 ILEC shall offer PSD interfaces adhering to the X.25, X.75 and X.75' ANSI and Bellcore requirements.

7.3.3.4 ILEC shall offer PSD trunk interfaces operating at 56 Kbps.

Section 8. Operator Systems

See Attachment VIII, Section 6.1.2 Directory Assistance Service and 6.1.3 Operator Service.

Section 9. Common Transport

9.1 **Definition:**

Common Transport is an interoffice transmission path between ILEC Network Elements (illustrated in Figure 2) shared by carriers. Where ILEC Network Elements are connected by intra-office wiring, such wiring is provided as a part of the Network Elements and is not Common Transport. ILEC shall offer Common Transport as of the effective date of the agreement, at DS0, DS1, DS3, STS-1 or higher transmission bit rate circuits. Common Transport consists of ILEC inter-office transport facilities and is distinct and separate from local switching.

Figure 2

9.2 Technical Requirements

9.2.1 ILEC shall be responsible for the engineering, provisioning, and maintenance of the underlying equipment and facilities that are used to provide Common Transport.

9.2.2 At a minimum, Common Transport shall meet all of the requirements set forth in the following technical references (as applicable for the transport technology being used):

9.2.3. ANSI T1.101-1994, American National Standard for Telecommunications - Synchronization Interface Standard Performance and Availability;

9.2.3.1 ANSI T1.102-1993, American National Standard for Telecommunications - Digital Hierarchy - Electrical Interfaces;

9.2.3.2 ANSI T1.102.01-199x, American National Standard for Telecommunications - Digital Hierarchy - VT1.5;

9.2.3.3 ANSI T1.105-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Basic Description including Multiplex Structure, Rates and Formats;

9.2.3.4 ANSI T1.105.01-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) Automatic Protection Switching;

9.2.3.5 ANSI T1.105.02-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Payload Mappings;

9.2.3.6 ANSI T1.105.03-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Jitter at Network Interfaces;

9.2.3.7 ANSI T1.105.03a-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET): Jitter at Network Interfaces - DS1 Supplement;

9.2.3.8 ANSI T1.105.05-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Tandem Connection;

9.2.3.9 ANSI T1.105.06-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Physical Layer Specifications;

9.2.3.10 ANSI T1.105.07-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Sub STS-1 Interface Rates and Formats;

9.2.3.11 ANSI T1.105.09-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Network Element Timing and Synchronization;

9.2.3.12 ANSI T1.106-1988, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (Single Mode);

9.2.3.13 ANSI T1.107-1988, American National Standard for Telecommunications - Digital Hierarchy - Formats Specifications;

9.2.3.14 ANSI T1.107a-1990 -American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications (DS3 Format Applications);

9.2.3.15 ANSI T1.107b-1991 -American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications;

9.2.3.16 ANSI T1.117-1991, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (SONET) (Single Mode - Short Reach);

9.2.3.17 ANSI T1.403-1989, Carrier to Customer Installation, DS1 Metallic Interface Specification;

9.2.3.18 ANSI T1.404-1994, Network-to-Customer Installation - DS3 Metallic Interface Specification;

9.2.3.19 ITU Recommendation G.707, Network node interface for the synchronous digital hierarchy (SDH);

9.2.3.20 ITU Recommendation G.704, Synchronous frame structures used at 1544, 6312, 2048, 8488 and 44736 kbit/s hierarchical levels;

9.2.3.21 Bellcore FR-440 and TR-NWT-000499, Transport Systems Generic Requirements (TSGR): Common Requirements;

9.2.3.22 Bellcore GR-820-CORE, Generic Transmission Surveillance: DS1 & DS3 Performance;

9.2.3.23 Bellcore GR-253-CORE, Synchronous Optical Network Systems (SONET); Common Generic Criteria;

9.2.3.24 Bellcore TR-NWT 000507, Transmission, Section 7, Issue 5 (Bellcore, December 1993). (A module of LSSGR, FR-NWT-000064.);

9.2.3.25 Bellcore TR-NWT-000776, Network Interface Description for ISDN Customer Access;

9.2.3.26 Bellcore TR-INS-000342, High-Capacity Digital Special Access Service-Transmission Parameter Limits and Interface Combinations, Issue 1 February 1991;

9.2.3.27 Bellcore ST-TEC-000052, Telecommunications Transmission Engineering Textbook, Volume 2: Facilities, Third Edition, Issue I May 1989;

9.2.3.28 Bellcore ST-TEC-000051, Telecommunications Transmission Engineering Textbook Volume 1: Principles, Third Edition. Issue 1 August 1987;

Section 10. Dedicated Transport

10.1 **Definition:**

10.1.1 Dedicated Transport is an interoffice transmission path between MCIm designated locations to which MCIm is granted exclusive use. Such locations may include ILEC central offices or other locations, MCIm network components, other carrier network components, or customer premises. Dedicated Transport is depicted below in Figure 3.

Figure 3

10.1.2 ILEC shall offer Dedicated Transport in each of the following manners:

10.1.2.1 As capacity on a shared facility.

10.1.2.2 As a circuit (e.g., DS1, DS3, STS-1) dedicated to MCIm.

10.1.2.3 As a system (i.e., the equipment and facilities used to provide Dedicated Transport such as SONET ring) dedicated to MCIm.

10.1.3 When Dedicated Transport is provided as a circuit or as capacity on a shared facility, it shall include (as appropriate):

10.1.3.1 Multiplexing functionality;

10.1.3.2 Grooming functionality; and,

10.1.3.3 Redundant equipment and facilities necessary to support protection and restoration.

10.1.4 When Dedicated Transport is provided as a system it shall include:

10.1.4.1 Transmission equipment such as multiplexers, line terminating equipment, amplifiers, and regenerators;

10.1.4.2 Inter-office transmission facilities such as optical fiber, dark fiber, copper twisted pair, and coaxial cable;

10.1.4.3 Redundant equipment and facilities necessary to support protection and restoration; and,

10.1.4.4 Dedicated Transport includes the Digital Cross-Connect System (DCS) functionality as an option. DCS is described below in Section 10.5.

10.2 Technical Requirements

This Section sets forth technical requirements for all Dedicated Transport.

10.2.1 When ILEC provides Dedicated Transport as a circuit or a system, the entire designated transmission circuit or system (e.g., DS1, DS3, STS-1) shall be dedicated to MCIm designated traffic.

10.2.2 ILEC shall offer Dedicated Transport using currently available technologies including, but not limited to, DS1 and DS3 transport systems, SONET (or SDH) Bi-directional Line Switched Rings, SONET (or SDH) Unidirectional Path Switched Rings, and SONET (or SDH) point-to-point transport systems (including linear add-drop systems), at all available transmission bit rates.

10.2.3 When requested by MCIm, Dedicated Transport shall provide physical diversity. Physical diversity means that two circuits are provisioned in such a way that no single failure of facilities or equipment will cause a failure on both circuits.

10.2.4 When physical diversity is requested by MCIm, ILEC shall provide the maximum feasible physical separation between transmission paths for all facilities and equipment (unless otherwise agreed by MCIm).

10.2.5 Upon MCIm's request, ILEC shall provide real time and continuous remote access to performance monitoring and alarm data affecting, or potentially affecting, MCIm's traffic.

10.2.6 ILEC shall offer the following interface transmission rates for Dedicated Transport:

10.2.6.1 DS1 (Extended SuperFrame - ESF/B8ZS, D4, and unframed applications shall be provided);

10.2.6.2 DS3 (C-bit Parity, M13, and unframed applications shall be provided);

10.2.6.3 SONET standard interface rates in accordance with ANSI T1.105 and ANSI T1.105.07 and physical interfaces per ANSI T1.106.06 (including referenced

interfaces). In particular, VT1.5 based STS-1s will be the interface at an MCIm service node.

10.2.6.4 SDH Standard interface rates in accordance with International Telecommunications Union (ITU) Recommendation G.707 and Plesiochronous Digital Hierarchy (PDH) rates per ITU Recommendation G.704.

10.2.7 ILEC shall provide cross-office wiring up to a suitable Point of Termination (POT) between Dedicated Transport and MCIm designated equipment. ILEC shall provide the following equipment for the physical POT:

10.2.7.1 DSX1 for DS1s or VT1.5s;

10.2.7.2 DSX3 for DS3s or STS-1s; and

10.2.7.3 LGX for optical signals (e.g., OC-3 and OC-12).

10.2.8 ILEC shall provide physical access to the POT for personnel designated by MCIm (for testing, facility interconnection, and other purposes designated by MCIm) 24 hours a day, 7 days a week.

10.2.9 For Dedicated Transport provided as a system, ILEC shall design the system (including but not limited to facility routing and termination points) according to MCIm specifications.

10.2.10 Upon MCIm's request, ILEC shall provide MCIm with electronic provisioning control of an MCIm specified Dedicated Transport.

10.2.11 ILEC shall offer Dedicated Transport together with and separately from DCS.

10.3 Technical Requirements for Dedicated Transport Using SONET Technology.

This Section sets forth additional technical requirements for Dedicated Transport using SONET technology including rings, point-to-point systems, and linear add-drop systems.

10.3.1 All SONET Dedicated Transport provided as a system shall:

10.3.1.1 Be synchronized from both a primary and secondary Stratum 1 level timing source.